Pre-Inspection Checklist for Potable Water Heaters-HLW

Spring 2003

Notice: This checklist reflects the most common violations our field inspectors encounter when performing an inspection on a hot water heating boiler installation. It's suggested that boiler industry personnel have access to a current set of applicable codebooks/jurisdictional laws. Such as: **Section IV of the ASME Boiler Code; The National Board Inspection Code (NBIC); Chapter 296-104 WAC, and Chapter 70.79 RCW of the Washington State Boiler and Unfired Pressure Vessel Laws.**

Administration and General Requirements

- A potable water heater (ASME HLW stamped) is considered a boiler when it supplies potable hot water for commercial purposes at pressures not exceeding 160 PSI and temperatures not exceeding 210?F except that water heaters are exempted when none of the following limitations is exceeded: (See WAC 296-104-010)
  (1) Heat input of 200,000 Btu/hr
  (2) Water temperature of 210?F
  (3) Nominal water-containing capacity of 120 gallons
- Every contractor shall be registered with the Department of Labor and Industries before installing/reinstalling, making repairs, or modifications to any boiler. See RCW 18.27 and 18.106
- Every contractor shall apply for and obtain a permit from the boiler section prior to making the installation/reinstallation of any boiler. See WAC 296-104-020
- A minimum clear space of eighteen inches (18") shall be provided all sides of the boiler. As a minimum all other sides shall comply with the boiler manufacturer's installation instructions for clearances to combustible materials. See WAC 296-104-255, 260, 265, and 271.
- The owner or user of any boiler required to be inspected upon installation/reinstallation shall not operate the boiler until a certificate-inspection has been made. See RCW 70.79.320
- All low-pressure boilers shall be constructed, stamped, and installed in accordance with Section IV of the ASME code. See WAC 296-104-200

Controls

- Each individual automatically fired water heater, in addition to the operating control used for normal water heater operation shall have a separate high temperature limit actuated combustion control that will automatically cut off

the fuel supply. The temperature range of the of the high temperature limit control shall not allow a setting over 210?F. See Section IV HLW-701

Installation Requirements

- Each water heater shall have at least one officially rated temperature and pressure safety relief valve or at least one officially rated safety relief valve. See Section IV HLW-800
- No safety relief valve shall be smaller than NPS ¾ inch. See Section IV HLW-800
- The safety relief valve pressure setting shall be less than or equal to the maximum allowable working pressure of the water heater. See Section IV HLW-800
- The required relieving capacity in Btu/hr of the safety relief valve shall not be less than the maximum allowable input. See Section IV HLW-800
- Safety relief valves shall be connected to the top of water heaters or directly to a tapped or flanged opening in the water heater. See Section IV HLW-801
- Safety relief valves shall be installed with their spindles upright and vertical with no horizontal connecting pipe, except that, when the safety relief valve is mounted directly on the water heater vessel with no more than 4 inch maximum interconnecting piping, the valve may be installed in the horizontal position with the outlet pointed down. See Section IV HLW-801
- No piping or fitting used to mount the safety relief valve shall be of a nominal pipe size less than that of the valve inlet. See Section IV HLW-801
- Safety relief valves shall not be connected to an internal pipe in the water heater or a cold water feed line connected to the water heater. See Section IV HLW-801
- No shutoff of any description shall be placed between the safety relief valve and the water heater, or on the discharge pipes between such valves and the atmosphere. See Section IV HLW-801
- When a discharge pipe is used, its internal cross-sectional area shall be not less than the full area of the valve outlet. See Section IV HLW-801
- The discharge from safety relief valves shall be so arranged that there will be no danger of scalding attendants. See Section IV HLW-801
- The safety relief valve discharge shall be as short and straight as possible and so arranged as to avoid undue stress on the valve. See Section IV HLW-801
- Water supply shall be introduced into a water heater through an independent water supply connection. See Section IV HLW-805
- Feedwater shall not be introduced through openings or connections provided for cleaning, safety relief valves, drain, or temperature gage. See Section IV HLW-805
- Provisions shall be made for the expansion and contraction of hot water mains connected to water heaters by providing substantial anchorage at suitable points and by providing swing joints when water heaters are installed in batteries. See Section IV HLW-809

- Each water heater shall have a bottom drain pipe connection fitted with a valve or cock connected to the lowest water space practicable. The minimum size bottom drain valve shall be ¾ inch. See Section IV HLW-810
- Any discharge piping connected to the bottom drain connection shall be full size to the point of discharge. See Section IV HLW-810
- Each installed water heater shall have a thermometer so located and connected that it shall be easily readable. See Section IV HLW-820
- The thermometer shall be so located that it shall at all times indicate the temperature of the water in the water heater at or near the outlet. See Section IV HLW-820

Note: Make certain that all items listed above are in compliance prior to requesting an inspection on a new or reinstalled boiler.